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(54) **Semiconductor memory device**

(57) A semiconductor memory device is capable of simultaneously reading data and refreshing data and checking whether a data restoring function is operating normally. A data inputting circuit receives data input from an external circuit. A parity generating circuit generates parity data from the data input from the data inputting circuit. A memory stores the data input from the data inputting circuit and the parity data generated by the parity generating circuit. A refreshing circuit refreshes the memory. A reading circuit reads the data from the memory. A restoring circuit restores data to be refreshed by the refreshing circuit from other data read normally and corresponding parity data, while the reading circuit is reading data. A data outputting circuit outputs the data read by the reading circuit and the data restored by the restoring circuit. A parity outputting circuit directly reads and outputs the parity data stored in the memory.

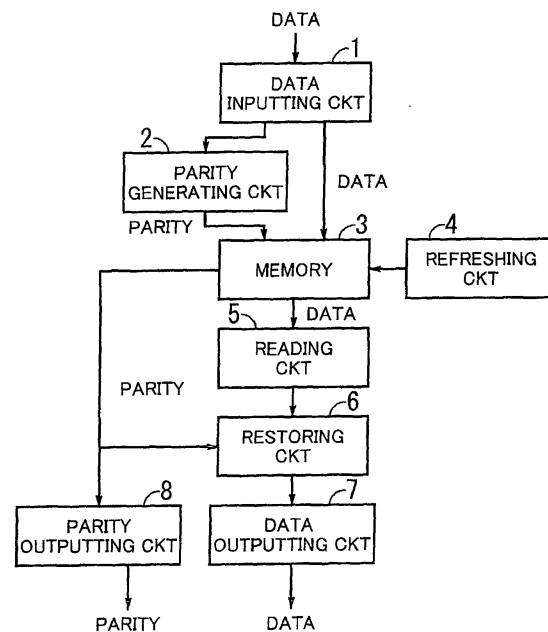


FIG. 1



European Patent
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EUROPEAN SEARCH REPORT

Application Number
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			G11C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 January 2004	Examiner Czarik, D
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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